



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.				
10/646,226	08/22/2003	Izaya Okae	3712174.00424	1391				
29175 K&L Gates LLP P. O. BOX 1135 CHICAGO, IL 60690	7590 11/12/2010		<table border="1"><tr><td>EXAMINER</td></tr><tr><td>ECHELMEYER, ALIX ELIZABETH</td></tr></table>		EXAMINER	ECHELMEYER, ALIX ELIZABETH		
EXAMINER								
ECHELMEYER, ALIX ELIZABETH								
			<table border="1"><tr><td>ART UNIT</td><td>PAPER NUMBER</td></tr><tr><td>1729</td><td></td></tr></table>	ART UNIT	PAPER NUMBER	1729		
ART UNIT	PAPER NUMBER							
1729								
			<table border="1"><tr><td>NOTIFICATION DATE</td><td>DELIVERY MODE</td></tr><tr><td>11/12/2010</td><td>ELECTRONIC</td></tr></table>	NOTIFICATION DATE	DELIVERY MODE	11/12/2010	ELECTRONIC	
NOTIFICATION DATE	DELIVERY MODE							
11/12/2010	ELECTRONIC							

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

chicago.patents@klgates.com

### Office Action Summary

**Application No.**

10/646,226

**Applicant(s)**

OKAE ET AL.

**Examiner**

Alix Elizabeth Echelmeyer

**Art Unit**

1729

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 October 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6, 7, 9, 10, 12-14, 16, 17, 19, 20, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6, 7, 9, 10, 12-14, 16, 17, 19, 20, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response***

1. This Office Action is in response to the Remarks filed October 20, 2010. Claims 6, 7, 9, 10, 12-14, 17, 20, 22, and 23 are pending and are rejected finally for the reasons given below.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 6, 7, 9, 12, 13, 16, 17, 19, 20, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaura (JP 2002-075368) in view of Abe (US 6,258,483) and Kurose et al. (WO00/02280, with US 6,824,924 used as an English translation, since it is the 371 of the foreign application) and as evidenced by Chaloner-Gill et al. (US 2002/0192137).

Yamaura teaches a positive electrode active material for a nonaqueous electrolyte cell wherein the particles of active material are of the formula  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  wherein M is one of Al, Co, and B, and the surfaces of the particles are covered by particles of the general formula  $\text{LiFePO}_4$  (abstract, [0001]).

Yamaura teaches coating of the  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  particles with the  $\text{LiFePO}_4$  particles by mixing in a hybridization system, adjusting the rotational speed to produce the desired product ([0054], [0055]). Since this same method is disclosed in the instant specification (page 11 lines 18-26), the skilled artisan would find that the resulting product would be the same.

In paragraph [0037] of the instant disclosure, applicants name  $\text{LiFePO}_4$  as a preferable positive active material but fail to state explicitly that  $\text{LiFePO}_4$  is of the olivine structure.

Chaloner-Gill teaches that crystalline lithium iron phosphate has an olivine structure ([0126]).

Yamaura fail to teach the claimed weight percent of  $\text{LiFeO}_4$  to lithium nickelate substrate.

Abe teaches a battery having a positive active material having one material coated on another (column 6 lines 2-5). Abe further teaches that the right amount of coating should be determined, since if there is too much or too little the active material will not have the desired properties of both materials (column 13 lines 38-48).

One of ordinary skill in the art could have applied the improvement of Abe of determining the best ratio coating to base particle to the ratio of nickelate to  $\text{LiFeO}_4$  in Yamaura and the results would have been predictable.

Regarding claims 7, 17, 20 and 23, the  $\text{LiNi}_{1-x}\text{M}_x\text{O}_2$  particles are 11.458  $\mu\text{m}$  on average and the  $\text{LiFePO}_4$  particles are 0.185  $\mu\text{m}$  on average ([0054]).

With further regard to claims 6, 12, 16, 19, 22 and 23, Yamaura fail to teach the claimed weight percent of  $\text{LiFeO}_4$  to lithium nickelate substrate.

Abe teaches a battery having a positive active material having one material coated on another (column 6 lines 2-5). Abe further teaches that the right amount of coating should be determined, since if there is too much or too little the active material will not have the desired properties of both materials (column 13 lines 38-48).

Further, when the desired ratio of  $\text{LiFePO}_4$  particles to nickelate is determined as discussed above, the claimed coating thickness would result since the thickness is determined by the amount of coating material.

One of ordinary skill in the art could have applied the improvement of Abe of determining the best ratio coating to base particle to the ratio of nickelate to  $\text{LiFeO}_4$  in Yamaura and the results would have been predictable.

Yamaura fails to teach the lithium nickelate compound of instant claims 6, 9, 12, 13, 16, 19, 22 and 23.

Kurose et al. teach  $\text{LiNiO}_2$  as a positive electrode active material (column 2 lines 56-58). Kurose et al. further teach that the use of  $\text{LiNiO}_2$  as a positive electrode active material leads to a reduction in size and weight in the battery, increasing energy density.

It would be desirable to use  $\text{LiNiO}_2$  as a positive electrode active material in the battery of Yamaura such as taught by Kurose et al. since it would lead to a reduction in size and weight in the battery, increasing energy density.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to look to the teachings of Kurose et al. suggesting the use of  $\text{LiNiO}_2$  as a positive electrode active material in the battery of Yamaura, since such a substitution of  $\text{LiNiO}_2$  for the lithium nickel oxide of Yamaura would result in the reduction of size and weight of the battery, leading to an increase in energy density.

4. Claims 10 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaura et al. in view of Abe et al. and Kurose et al. and as evidenced by Chaloner-Gill et al., as applied to claims 6 and 12 above, and further in view of Goodenough et al. (US 6,391,493).

Yamaura et al. in view of Abe et al. and Kurose et al. fail to teach that the olivine compound of the positive active material is  $\text{LiMnPO}_4$ .

Goodenough et al. teach that that a preferred olivine electrode compound is  $\text{LiMnPO}_4$  (column 2 lines 22-24), since it has a larger free volume for lithium-ion motion, which leads to higher lithium-ion conductivity and higher power density, as well as making an inexpensive and nonpolluting battery (column 1 lines 51-57).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to look to the teachings of Goodenough et al. suggesting the use of  $\text{LiMnPO}_4$  as a positive electrode active material in the battery of

Yamaura in view of Kurose et al., since such a substitution of  $\text{LiMnPO}_4$  for the  $\text{LiFePO}_4$  of Yamaura is obvious over the teachings of Goodenough et al.

### ***Response to Arguments***

5. Applicant's arguments filed October 20, 2010 have been fully considered but they are not persuasive.

Beginning on page 3, Applicant argues that Yamaura in view of Abe fails to teach that the surfaces of the particles are uniformly coated. The examiner disagrees.

Applicant first argues that the method of Yamaura is different from the instantly disclosed method. The examiner is not convinced. While Yamaura provides different specifications on how the method is carried out, Applicant has not shown that the actual method is different, or that the method of Yamaura would not produce the product of the instant invention. Applicant states that the instant method is carried out at different speeds for different periods of time than the method of Yamaura, but does not explain why changing the method in the same parameters as Applicant does (speed or time) will not result in the method of Yamaura.

Next, Applicant argues that Yamaura teaches that the coating particles are attached to the front face of the base particles. Applicant's instantly filed claims can be interpreted as claiming the coating particles adhered to the front face of the base particles as well, since the skilled artisan will recognize that the surface of a particle that is in a layer would only by the front face, since the other parts of the particle would not be exposed. However, the examiner holds that the method of Yamaura would result in

the limitation as Applicant has interpreted it as well as the broader interpretation just discussed.

As to the thickness and weight percent of the coating, Applicant argues that the combination of Yamaura and Abe is not proper because, according to Applicant, the skilled artisan would have no reason to combine the references. The examiner has addressed this argument in the Non-Final Rejection mailed July 20, 2010. Further, the examiner finds that the skilled artisan would not need to have the exact teachings suggested by Applicant on page 5 of the remarks, for example the kinds of materials Applicant names, in order to combine the teachings of Yamaura and Abe. It is well within the ordinary level of skill in the art to look to two coated electrodes and take lessons from one in the formation of another. It has been held that the use of known techniques to improve similar devices in the same way is within the ordinary level of skill in the art. MPEP 2141 III C

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any



extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ula C Ruddock/  
Supervisory Patent Examiner  
Art Unit 1795

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1729

aee